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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,512	06/26/2000	EVGENY INVIEVICH GIVARGIZOV	GIVAR.001APC	7492

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EXAMINER

LIN, JAMES

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/530,512

Applicant(s)

GIVARGIZOV ET AL.

Examiner

Jimmy Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/1/05 has been entered.

Information Disclosure Statement

2. The information disclosure statement filed 6/26/2006 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

3. The information disclosure statement filed 6/26/2006 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because it lacks a corresponding PTOL-1449 form. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 18-29 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 18-29: There is no disclosure which would enable one of ordinary skill in the art to make the invention which would enable one of ordinary skill in the art to have practiced the invention without undue experimentation. Applicant claims the deposition of an “intermediate substance” other than the luminescent material that “form[s] a liquid phase at the crystallization temperature”. However, neither the specification nor the prior art gives much, if any, guidance or teaching as to the selection of any such material. Therefore, one of ordinary skill in the art would have had to have performed undue experimentation in order to have found such a material and thereby to have practiced practice the invention.

Claims 24-26 and 28-29: The terms “regular structure” and “structure with crystallographically-symmetric character” are not defined by the specification nor the prior art, and it is not clear what the terms mean. One of ordinary skill in the art would not be able to perform the claims without undue experimentation because it is not clear what “regular structure” and “structure with crystallographically-symmetric character” mean and because neither the specification nor the prior art gives any guidance as to how such structures are created.

6. Claims 18-29 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 18 (and dependent): There is no support for the limitation that the crystallization temperature is that of a single-crystalline material that is part of the substrate on which an intermediate material is deposited. In fact, there is no support in the specification as originally filed to identify what material the “crystallization temperature” referred to because the specification is not clear on the subject.

There is no support for the limitation of depositing an intermediate material on a substrate that comprises single-crystalline columns before depositing a luminescent material. In fact, Applicant even argues that it is *not* the invention to deposit an intermediate material on a single-crystalline substrate, but rather to deposit an intermediate material on a substrate and then a single-crystalline luminescent material on the intermediate material (Amendment filed 8/1/2005, pg. 5, 2nd paragraph).

Claims 25-26 and 28-29: There is no disclosure that the structure formed on the substrate is of “regular character” nor of “crystallographically-symmetric” character. (The originally filed specification applies the adjectives “regular” and “crystallographically-symmetric” to the noun “inhomogenities”.)

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 18-29 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claims 18-29 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the Amendment filed 8/1/2005. In the Amendment, the Applicant has stated that the intermediate material is deposited before the formation of the single-crystalline luminescent columns (Amendment filed 8/1/2005, pg. 5, 2nd paragraph), and this statement indicates that the invention is different from what is defined in the claim(s) because the claims require that the intermediate material is deposited on single-crystalline columns. (The Examiner considered this aspect of the invention to be clear in the originally filed claims; see the Office Action filed 6/18/2002, p. 3, 4th full paragraph (‘The phrase “luminescent...”’)) Independent claim 18 requires providing a substrate comprising single-crystalline columns, depositing an intermediate

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material on said substrate (which, as stated above, comprises the single-crystalline columns), and depositing a luminescent material different from the intermediate material on the substrate (which, as stated above, comprises the single-crystalline columns).

9. Claims 18-19 and 21-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 18: The phrase “wherein the intermediate material forms liquid at the crystallization temperature of the single-crystalline material” is unclear because it is not clear (except claim 20, which positively recites that “the intermediate material *is* liquid” (emphasis added by the Examiner)) whether the substance merely be capable of forming such a liquid or whether the claims actually require the formation of such a liquid phase.

Claims 25-26, 28-29: The claims are unclear because the terms “regular structure” and “structure with crystallographically-symmetric character” are not defined in the specification nor the prior art, and therefore it is unclear what the terms mean.

Claim 27: The claim is unclear as to how the activator is introduced into the *luminescent material* when claim 23 requires the activator to be in the *intermediate material* and when claim 18 requires the luminescent material to be different from the intermediate material.

Response to Arguments

10. Applicant's arguments filed 11/21/2002 have been fully considered but they are not persuasive.

Discussion of Claim Rejections Under 35 U.S.C. 112(1)

A. Enablement Requirement

Discussion of claims 18-29:

The Applicant argues that the specification gives sufficient guidance and teaching as to the selection of an intermediate material selected to be liquid at the crystallization temperature of the single-crystalline material of the substrate. The Applicant further argues that such teaching suggests the use of materials such as metallic elements or metal alloys, gallium, indium, tin, or lead. However, the Examiner cannot find any guidance in the specification to select such

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materials. The Applicant merely states that such knowledge would be recognized by the skilled person, but does not specifically point out the support in the specification.

Discussion of claims 24-26 and 28-29:

The Applicant argues that “the regular structure” and “structure with crystallographically-symmetric character” are examples of inhomogenities as cited in the specification. However, the claim does not require that such structures are of inhomogenities. In addition, the Applicant does not address the rejection in regards as to how the terms “regular structure” and “structure with crystallographically-symmetric character” are neither defined by the specification nor known in the prior art. Thus it is not clear what the terms mean.

B. Written Description

The Applicant argues that the skilled person knows that each of the materials used in chemical or physical vapor deposition has a specific melting point so that the material changes its phase when the temperature is reduced from above the melting point to below the melting point and that the material changes from the liquid phase to the solid phase at the crystallization temperature. However, the Applicant does not address the rejection. For example, there is no support that the crystallization temperature refers to the single-crystalline material provided on the substrate. In fact, the specification does not indicate what material the “crystallization temperature” refers to.

The Applicant argues that support for depositing an intermediate material on a substrate comprising single-crystalline columns before depositing a luminescent material can be found on the second paragraph of the Summary of the Invention. However, the cited paragraph does not discuss a substrate comprising single-crystalline columns, much less depositing an intermediate material onto such columns.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Insofar as the claims are understood, the following art appears to be relevant:

U.S. Patent 4,626,694 to Sano et al. teaches the deposition of phosphor material in columns (Fig. 12) by molecular beam epitaxy (MBE) (col. 5, lines 30-44). MBE inherently produces single-crystalline structures and is a vapor deposition technique. There is an intermediate layer (36) on metal substrate (37) that may be a metal oxide or synthetic resin (col. 5, lines 21-29). However, it is unclear whether these materials form liquids at any relevant crystallization temperatures.


U.S. Patent 4,626,739 to Shmulovich teaches the deposition of phosphor material by the formation of a single-crystalline layer of a phosphor (col. 5, lines 9-14) and then etching to form mesas (i.e., columns) (col. 2, lines 49-55; Example; Fig. 1). It is unclear whether the underlying layers (24) (a binder layer which may be made of Al-Si or Au-Si (col. 3, lines 47-50)) or reflective layer (16) (which may be Al or silica (col. 3, lines 43-47)), which are formed on substrate (22) form liquid phases at any relevant crystallization temperatures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1700.

JL
JL


KEITH HENDRICKS
PRIMARY EXAMINER